TRACER TIGHT ELD TEST

of

ExxonMobil

Retail Station #28329

at

2800 Fallston Road

Fallston, MD 21047

July 25-28, 2004

Tracer Tight Pre-Test
ExxonMobil
Retail Station # 28329
2800 Fallston Road
Fallston, MD 21047

July 20-24, 2004

Prepared for:

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1 *Executive Summary*

Praxair Services, Inc. performed a **Tracer Tight®** ELD test at the ExxonMobil Retail Station #28329 at 2800 Fallston Road in Fallston, MD from July 25, 2004 through July 28, 2004.

To prepare the four UST systems for the ELD test, Praxair conducted a Tracer Tight Pre-test. On July 20, 2004, helium was added to the vapor phase of each system including the tanks and the vent and vapor recovery piping. A sensitive hand held detector was used to test for helium emissions from tank top fittings.

The tank-top fittings were tested at a pressure of 2 inches of water column. Vapor phase piping was tested at 14 inches of water column. Thirty-two specific components required replacement or adjustment. Each component was then re-tested at 14 inches of water. After needed adjustments and replacements were completed, helium emissions were no longer detected.

From July 20, 2004 through July 23, 2004, 53 sampling probes (or ports) were installed through pavement into the backfill of the tank excavation and piping trenches

Tracer E was added to the product in the tanks and piping late in the evening of July 25, 2004. A few hours after the addition of Tracer E to the system, another Tracer,Tracer W was injected into the backfill to validate the test. Tracer W was detected at sufficient levels to validate the test on the afternoon of July 27, 2004.

On that afternoon, and the following morning of July 28, 2004 samples were collected from the 53 sampling ports and analyzed for Tracer E. Samples had also been collected from the tank top sumps and from within the dispenser cabinets. No Tracer E was detected outside the system.

No leak greater than 0.005 gallons per hour (gph) would have gone undetected. No leak was detected. The system tested tight to the **Tracer Tight** ELD method.

2 Project Description

Praxair Services, Inc. was retained by ExxonMobil to conduct a **Tracer Tight®** ELD test at Retail Station # 28329 at 2800 Fallston Road, Fallston, MD 21047.

The purpose of the test was to determine the tightness of the underground portions of the fuel storage and dispensing equipment. The **Tracer Tight®** method was chosen because it is more sensitive to leaks than any other testing method. It is able to detect very small leaks whether liquid or vapor. It is certified to be able to detect any leak at a rate of 0.005 gallons per hour (gph) with a probability of detection greater than 0.95 and a probability of false alarm less than 0.05.

A tracer was added to the product in each of the underground storage tank (UST) systems, including the tanks, product piping, vents and vapor return lines. After the appropriate waiting period, samples were collected from the backfill and analyzed for the presence of the tracer. A second tracer, referred to as a leak simulation tracer was injected into the backfill. The migration of the leak simulation tracer was monitored to validate the test parameters.

Samples were also collected from the tank top sumps and from within the dispenser cabinets.

3 Background

There are many fittings associated with an underground storage tank (UST) system that are not covered by the backfill, but are accessible below manhole covers and within containment sumps and dispenser cabinets. Praxair Services conducted a pre-test in order to identify any fugitive vapor emissions that could be eliminated prior to conducting the sensitive ELD test. This helped ensure that any tracer emissions detected during the ELD test would be related only to buried fittings.

4 Site Description

The 4 UST systems at ExxonMobil retail station #28329 include tanks and piping for diesel and three grades of gasoline. The diesel system includes liquid product piping from the tank to the dispensers and vent piping. The gasoline systems include product and vent lines for each product as well as a vacuum assisted vapor recovery manifold that returns gasoline vapors to the tanks during dispensing events.

The four submersible turbine pump (STP) heads are accessible within sumps that are attached to the tops of the tanks. These turbine sumps (TS) are approximately 5 feet deep and 4 feet in diameter. The Automatic Tank Gauge (ATG) access risers for the 89, 93 and diesel tanks are also located within these sumps. Access to the ATG riser for the 87 tank is provided by a manhole cover. This riser is in direct contact with the backfill. Each of the gasoline storage tanks is equipped with a fill riser and a vapor return riser. The diesel tank has only a fill riser as there is no vapor return requirement for diesel. Each riser is fitted with a spill containment bucket (SB). The risers and the spill buckets are in direct contact with the soil.

The tanks are single wall fiber reinforced plastic (FRP). All the product piping is also single wall FRP. Tables 1 through 3 summarize the configuration of the UST systems. An Explanation of Abbreviations is provided in Appendix D.

Table 1. General Description of UST systems

Component	Number	Design	Material	Description
	4	SW	FRP	N/A
			FRP	2-inch
Vapor Return Manifold	1	SW	FRP	vacuum assist, manifold
Vent	2	SW	FRP	1/diesel, 1/gasoline tanks
Turbine Sumps	4	SW	Plastic	4 foot diameter access to submersible turbine pumps (STP)
Fill Risers	4	SW	Steel	4 in. diameter, not in a sump
Vapor Riser	2	SW	Steel	87 and 93, 4 in. diameter, not in a sump
Spill Containment Buckets (SB)	6	SW	Plastic	Approximately 5 gallons on each riser, not in a sump
Dispensers	12	N/A	N/A	2/diesel, 10/each gasoline grade
Dispenser Cabinets	6	N/A	N/A	N/A
Under Dispenser Containers	6	N/A	N/A	1 per cabinet, bottom penetrations
Pressure/ Vacuum valve	1	N/A	N/A	1/gasoline +2.5/-8 in. water

Table 2. Description of UST systems: Tanks and Piping

UST System	Product	Tank Capacity	Piping	Vapor Return/Vent Piping (manifold)
1	87 unleaded	12,000 gallons	170 feet	230 feet
2	89 unleaded	10,000 gallons	180 feet	230 feet
3	93 unleaded	10,000 gallons	190 feet	230 feet
4	diesel	6,000 gallons	100 feet	N/A

Piping lengths are approximate

Table 3. Description of UST Systems: Tank-top Connections

UST System	Sumps	ATG riser	Fill	Vapor Riser	Vapor Return	Vent
1	1, STP	in backfill	in backfill	in backfill	to Vapor Riser	to Vapor Riser
2	1, STP	in sump	in backfill	in backfill	to Vapor Riser	to Vapor Riser
3	1, STP	in sump	in backfill	in backfill	to Vapor Riser	to Vapor Riser
4	1, STP	in sump	in backfill	N/A	N/A	not determined

5 *Pre-test*

5.1 Procedures

Helium was added to the vapor space of each tank. The gas was added to the gasoline tanks through the Stage I Vapor Return riser. Helium was added to the diesel tank through the vent. The helium cylinder was also used to increase the pressure in the tank, vapor recovery and vent piping to 2 inches of water column, just below the relief pressure of the pressure/vacuum valve (PV valve) and close to the maximum operating pressure for the stage II vapor recovery system that is associated with the dispensers. The diesel vent pipe is always open and the operating pressure for the vapor portion of the diesel system is very close to zero.

A hand held helium detector was used to test the atmosphere below manhole covers, sump lids and spill bucket covers. An increase in the helium background indicated the need for an adjustment to some fitting within the sampled space. The sensor was used to identify specific components above ground, or in secondary containment related to the emission of helium. Vapor fittings within dispenser cabinets were also tested. Helium was added to the vapor return piping within the dispenser and the detector was used to test for it within the cabinet.

5.1.1 Detector Calibration

At least daily, the detector was calibrated by diluting a measured amount of helium into a known volume of air and measuring the response of the sensor. The magnitude of the response was checked as well as the response time.

5.2 Replacements and Adjustments

Appendix E lists all of the replacements and adjustments that took place in conjunction with the **Tracer Tight®** Pre-test.

If the detector indicated an increase over the background level of helium within a sampling space, testing continued until the source of the emission was identified. After an assessment by the maintenance contractor, the component was either: tightened or adjusted; disassembled, conditioned and reassembled; or replaced. Thirty-two components of the vapor containment of the four UST systems were tightened or adjusted; disassembled, conditioned and reassembled; or replaced during pre-test activities. After these events, helium emissions were no longer detectable from any of the accessible fittings.

5.2.1 Damage and Repair of the 93 Vapor Recovery Spill Bucket

Because of emissions from the vapor recovery spill bucket riser, at the bottom of the spill containment bucket, the maintenance contractor decided to remove and replace the riser. During the replacement, the vapor recovery spill bucket was damaged. Repair of the spill bucket required the removal of concrete around the form ring for the manhole cover and some excavation.

Soon after the spill bucket riser was repaired, helium was detected in the spill bucket and in the backfill. Helium was not detected in samples taken from the backfill near the vapor recovery riser prior to the replacement of the spill bucket riser. Vapor emissions from this component occurred only for the short time between the initial replacement of the spill bucket riser and the repair of the damaged vapor recovery spill bucket.

After the vapor recovery spill bucket was reassembled, the connections were pre-tested before replacement of the backfill and the concrete cover.

5.3 Retesting

The initial test pressure for vapor phase components was 2 inches of water column, close to the maximum operating pressure. After the elimination of all emissions at the initial test pressure, vapor components were retested at 0.5 psig or 14 inches of water column.

Pre-test Summary

Helium emissions were detected within dispenser cabinets, tank-top sumps, spill containment buckets and below manhole covers. There are openings that provide access to the backfill from these spaces. Any vapors admitted to these spaces could migrate into the backfill or could be released to the atmosphere.

All of the Helium emissions that were detected were addressed. After they could no longer be detected from any vapor component, the UST systems at Retail Station #28329 were prepared for a **Tracer Tight®** ELD test of all the underground components.

6 *Tracer Tight® ELD Test Procedures*

Tracer Addition

An inert chemical concentrate, a tracer, was added to the product in the UST systems at the facility. Tracer E was used to test the tanks and piping. Tracer E has no toxic properties and is compatible with fuels, fueling systems and motor vehicles. The tracer has no effect on the properties of the fuel. The tracer is added at such low concentrations that the presence of the tracer can only be discerned by a very sensitive and selective analysis designed to detect it.

A pre-measured amount of Tracer E was dispensed below the liquid level of the product in each of the tanks. A mixing apparatus was connected to the tank system and fuel was circulated within the tank. After the tracer was thoroughly mixed with the fuel, tracer labeled fuel was pumped through each dispenser to flush the old product out of the piping.

The tracer evaporates readily and part of the tracer moves to the vapor phase of the system. The tracer labeled vapors were also pushed through the vent and vapor recovery piping.

An inert gas was used to increase the pressure in the tank, vapor recovery and vent piping. The pressure was maintained at approximately 2 inches of water column, just below the relief pressure of the pressure/vacuum valve (PV valve) and close to the maximum operating pressure for the vapor recovery system. The diesel vent pipe is always open and the operating pressure for the vapor portion of the diesel system is very close to zero.

Tracer E was added to the tanks at approximately 20:00 on July 25, 2004. Tracer labeled product was moved through the piping by 00:00 on July 26, 2004.

Leak Simulation

In order to validate the test parameters, a leak simulation was conducted. These parameters include: tracer concentration in the product, analytical sensitivity for the tracer, tracer mobility, waiting period and sample spacing. Tracer W was injected into the backfill at two locations, probes 18 and 44, at 01:30 on July 26, 2004. A map of the probe locations relative to the UST systems is provided in Appendix C. (Tracer W has no toxic properties or environmental impacts. Only a trace amount of vapors were released.)

Sampling Probe Installation

July 20, 2004 through July 23, 2004, 53 sampling probes were installed in the backfill within the tank excavation and along the piping trenches. A map of the probe locations relative to the UST systems is provided in Appendix C.

A 1.5-inch hole was drilled through the concrete or asphalt pavement. A 1-inch or ¾-inch nominal diameter pipe was inserted into the ground. The pipe was advanced into the soil using no more than hand pressure while backfill material is removed through the pipe. After it was inserted to the proper depth, a surface completion fitting was attached to the pipe and the top of the fitting was pushed flat with the paving surface. The surface fitting or probe cap was sealed in the pavement.

Probes at this site were installed on 10-foot centers. The probes along the piping were installed to a depth of approximately 1.5 feet. The probes along the ridges of the tanks were

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Probes at this site were installed on 10-foot centers. The probes along the piping were installed to a depth of approximately 1.5 feet. The probes along the ridges of the tanks were installed to a depth of approximately 3 feet and the probes between the tanks were installed to a depth of approximately 10 feet.

The composition of the backfill was verified by inspection of the material that was removed during the probe installation. After the probe was installed, the permeability of the soil was verified by pumping soil gas from the probe and monitoring the pressure at the inlet of the pump.

The tank excavation and product piping trenches were backfilled with pea gravel. The vent piping trench was backfilled with a sandy soil. The permeability of all of the backfill was sufficient to allow the migration of the tracers.

Sample Collection

Approximately 36 hours after Tracer E was added to the UST systems and Tracer W was injected into the backfill, soil gas samples were collected from the 53 sampling probes. Samples were collected by evacuating soil gas through the probes. Samples of the vapors were collected in a syringe and the syringe was used to push the sample into a clean sample canister.

Samples were collected from sumps and dispenser cabinets by attaching small diameter tubing using the syringe to flush the ambient air from the tube and fill the syringe with a sample that was representative of the air within the sampling space.

6.5 Calibration and Analysis

The analytical instrument was calibrated using an external standard gas standard. A tracer gas mixture of known concentration was injected into the instrument and the response was measured. A similar volume of each test sample was injected into the calibrated instrument and the concentration of any test or leak simulation tracer in the sample was determined by comparing the response to the sample to the instrument response to the standard. The minimum detectable quantity of the tracer was estimated from the random noise of the baseline signal.

Air blanks were analyzed to demonstrate that the sampling equipment did not contain any residual tracer.

Interpretation

Leak Detection Criteria

Any detection of tracer in the samples is an indicator of a possible release. Releases of the tracer that are associated with leaks are reproducible. The concentration of the tracer is relatively constant in replicate samples and the test results can be repeated with another tracer in a confirmation test. Early in the test period, ongoing releases lead to concentrations of tracer in the nearby probes that increase with time.

6.6.1 Leak Rate Sensitivity

The leak rate sensitivity for components within sumps and cabinets is calculated from the minimum detectable level of the tracer, the concentration of tracer in the product and the expected dilution of the tracer into the sampling space.

The leak rate sensitivity of the test is approximated from the results of the leak simulations. The test tracer and the leak simulation tracer are expected to migrate in similar ways. The migration of the leak simulation tracer is monitored by collecting samples from the probes surrounding the location where it was injected. The leak simulation tracer must migrate at least as far as the greatest distance from any possible leak location and a sampling probe. A known amount of this tracer is released into the backfill. The concentration at the nearest sampling probe is measured. When the leak simulation tracer has migrated far enough, the waiting period has been long enough.

The amount of test tracer that would be released by a 0.005 gph leak can be determined by two criteria; known concentration of that tracer in the product in the UST system, and the minimum detectable level of the test tracer in a sample. If the test tracer and the leak simulation tracer migrate similarly, the fraction of leak simulation measured in the nearest probe should be comparable to the fraction of the test tracer that would migrate to a sampling probe the same distance away from the leak.

The supporting assumption is that the backfill conditions between the leak simulation injection probe and the leak simulation sampling probe would be similar to the conditions between a leak and the sampling probe. Since the backfill at this facility is pea gravel, this is a reasonable assumption.

7 Results

No release of Tracer E, the test tracer, was detected from the system. The results of the leak simulation support a leak rate sensitivity of at least 0.005 gallons per hour (gph). With a degree of confidence greater than 95%, the Tracer Tight ELD method would have detected any release at a leak at a rate of 0.005 gph. No indication of a leak was detected.

APPENDIX A: Certification

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7/28/04
30665U-24HA
ExxonMobil Retail Station #28329
2800 Fallston Road
Fallston, MD 21047

SYSTEM STATUS

	PRODUCT	SIZE	TRACER	Pass/Fail
1	87 Unleaded	12,000	E	Pass
2	89 Unleaded	10,000	E	Pass
3	93 Unleaded	10,000	E	Pass
4	Diesel	6,000	E	Pass

Soil permeability is greater than 41.6 darcys.

GROUND WATER INFO

SYSTEM #	DEPTH / GROUND WATER (Inch)	DEPTH / TOP OF TANK (Inch)	DEPTH / BOTTOM OF TANK (Inch)
1	>120	48	144
2	>120	52	148
3	>120	53	149
4	>120	54	150

PRODUCT LEVELS

SYSTEM #	PRODUCT LEVEL (gallons) AT INOCULATION	PRODUCT LEVEL (gallons) AT SAMPLING
Tank 1	5810	1719
Tank 2	2624	1762
Tank 3	3001	2318
Tank 4	3513	2931

SITE COMMENTS

Tank and piping excavation backfill is pea gravel.
Ground Cover consists of concrete and asphalt.

TEST EVENTS

INSTALLATION	INOCULATION	SAMPLING	ANALYSIS
7/20/04 – 7/23/04	7/25/04		

Prepared By: Randy Golding

Onsite Project Manager: Ken Huey

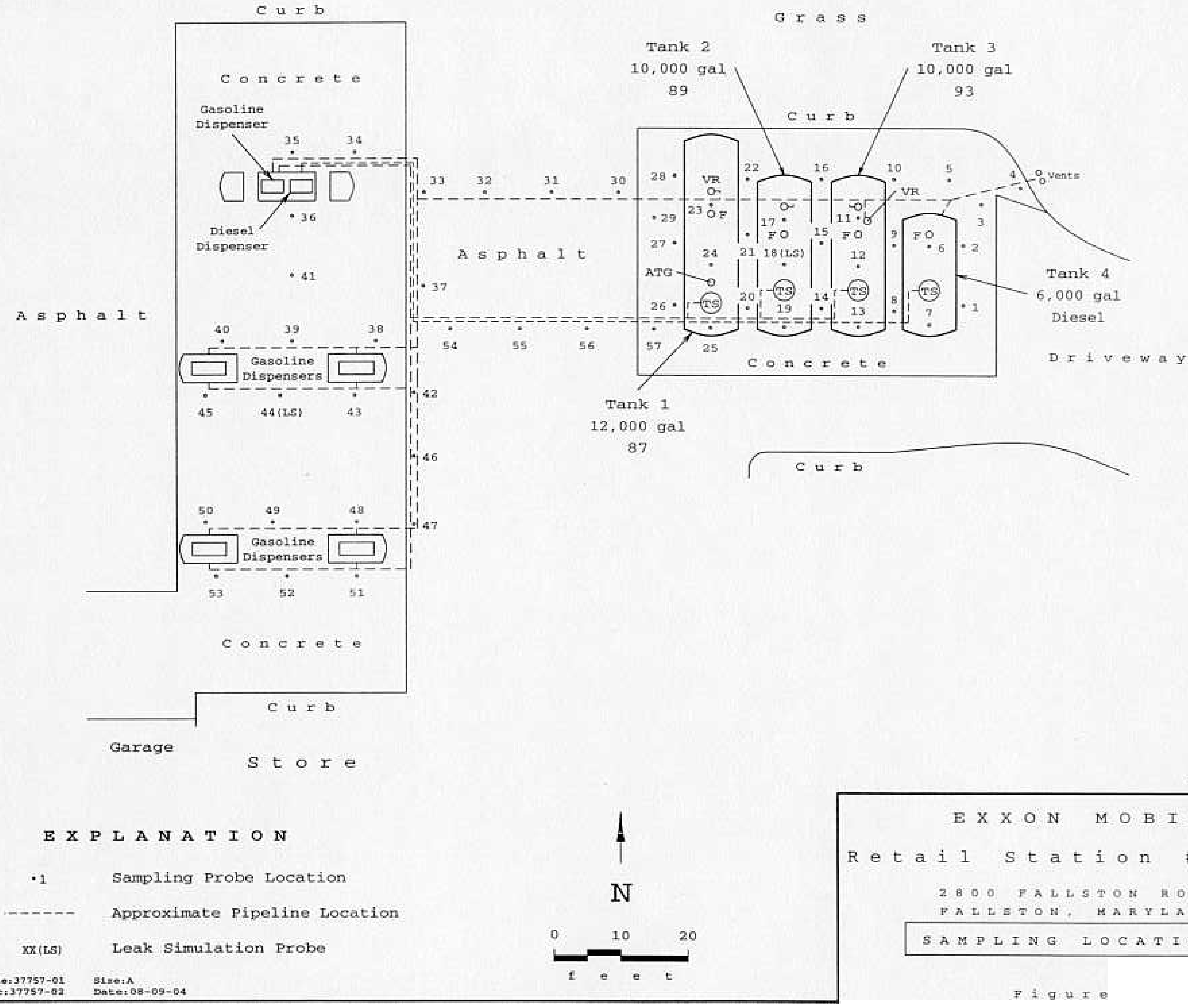
APPENDIX B: Analytical Data

SAMPLE ID	Tracer W (µg/L)	Tracer E (µg/L)
87 T.S. 7-25-04 22:37	<0.002	<0.004
89 T.S. 7-25-04 22:40	<0.002	<0.004
87 FILL 7-25-04 23:00	<0.002	<0.004
87 VR 7-25-04 23:01	<0.002	<0.004
89 VR CAPPED RISER 7-25-04 23:06	<0.002	<0.004
89 FILL 7-25-04 23:05	<0.002	<0.004
93 FILL 7-25-04 23:15	<0.002	<0.004
93 VR 7-25-04 23:16	<0.002	<0.004
93 VR CAPPED RISER 7-25-05 23:17	<0.002	<0.004
DSL TS 7-25-04 22:45	<0.002	<0.004
87 ATG 7-25-05 22:58	<0.02	<0.04
93 T.S. 7-26-04 2:25	<0.002	<0.004
DSL Fill 7-29-04 12:26	Not Reported	<0.0001
P.1 7-27-04 15:09	<0.0002	<0.0004
P.2 7-27-04 15:04	0.0005	<0.0004
P.3 7-27-04 15:05	<0.0002	<0.0004
P.4 7-27-04 15:02	<0.0002	<0.0004
P.5 7-27-04 15:10	<0.0002	<0.0004
P.6 7-27-04 23:21	Not Reported	<0.0001
P.7 7-27-04 23:25	Not Reported	<0.0001
P.8 7-27-04 23:29	Not Reported	<0.0001
P.9 7-27-04 23:33	Not Reported	<0.0001
P.10 7-27-04 23:37	Not Reported	<0.0001
P.11 7-27-04 23:40	Not Reported	<0.0001
P.12 7-27-04 15:20	0.04	<0.0004
P.13 7-27-04 23:45	Not Reported	<0.0001
P.14 7-27-04 15:24	0.1	<0.0004
P.15 7-27-04 15:25	<0.0002	<0.0004
P.16 7-27-04 23:50	Not Reported	<0.0001
P.17 7-27-04 15:28	<0.0002	<0.0004
P.18 7-27-04 15:50	0.03	<0.0004
P.19 7-27-04 20:27	0.01	<0.0004
P.20 7-27-04 15:51	<0.0002	<0.0004
P.21 7-27-04 15:55	<0.0002	<0.0004
P.22 7-27-04 23:54	Not Reported	<0.0001
P.23 7-27-04 23:57	Not Reported	<0.0001
P.24 7-28-04 00:01	Not Reported	<0.0001
P.25 7-28-04 00:05	Not Reported	<0.0001
P.26 7-28-04 00:11	Not Reported	<0.0001
P.27 7-28-04 00:15	Not Reported	<0.0001
P.28 7-28-04 00:19	Not Reported	<0.0001
P.29 7-28-04 12:38	Not Reported	<0.0001
P.30 7-28-04 00:33	Not Reported	<0.0001

SAMPLE ID	Tracer W (µg/L)	Tracer E (µg/L)
P.31 7-28-04 13:00	Not Reported	<0.0001
P.32 7-28-04 13:04	Not Reported	<0.0001
P.33 7-28-04 13:08	Not Reported	<0.0001
P.34 7-28-04 13:13	Not Reported	<0.0001
P.35 7-28-04 13:23	Not Reported	<0.0001
P.36 7-28-04 13:47	Not Reported	<0.0001
P.37 7-28-04 13:38	Not Reported	<0.0001
P.38 7-28-04 14:39	<0.0002	<0.0004
P.39 7-27-04 19:12	0.03	<0.0004
P.40 7-27-04 19:13	<0.0002	<0.0004
P.41 7-27-04 22:30	Not Reported	<0.0001
P.42 7-27-04 22:34	Not Reported	<0.0001
P.43 7-27-04 19:20	0.01	<0.0004
P.44 7-27-04 19:21	0.2	<0.0004
P.45 7-27-04 19:23	0.002	<0.0004
P.46 7-27-04 19:25	Not Reported	<0.0004
P.47 7-28-04 13:52	Not Reported	<0.0001
P.48 7-28-04 14:04	Not Reported	<0.0001
P.49 7-28-04 14:16	Not Reported	<0.0001
P.50 7-28-04 14:20	Not Reported	<0.0001
P.51 7-28-04 14:30	Not Reported	<0.0001
P.52 7-27-04 23:11	Not Reported	<0.0001
P.53 7-27-04 22:20	Not Reported	<0.0002
P.54 7-27-04 23:01	Not Reported	<0.0001
P.55 7-27-04 22:46	Not Reported	<0.0001
P.56 7-27-04 22:42	Not Reported	<0.0001
P.57 7-27-04 22:38	Not Reported	<0.0001
DISP. 5-6. 7-28-04 14:00	Not Reported	<0.0001
DISP. 7-8. 7-28-04 14:25	Not Reported	<0.0001
DISP. 9-10 7-28-04 14:34	Not Reported	<0.0001
DISP. 3-4. 7-27-04 23:16	Not Reported	<0.0001
DISP. 1-2. 7-28-04 13:18	Not Reported	<0.0001
DISP. DSL 7-28-04 19:50	Not Reported	<0.0001

Appendix C: Maps

Praxair Services, Inc.



37757EL-0000

EXXON MOBIL

Retail Station #28329

2800 FALLSTON ROAD
FALLSTON, MARYLAND

SAMPLING LOCATIONS

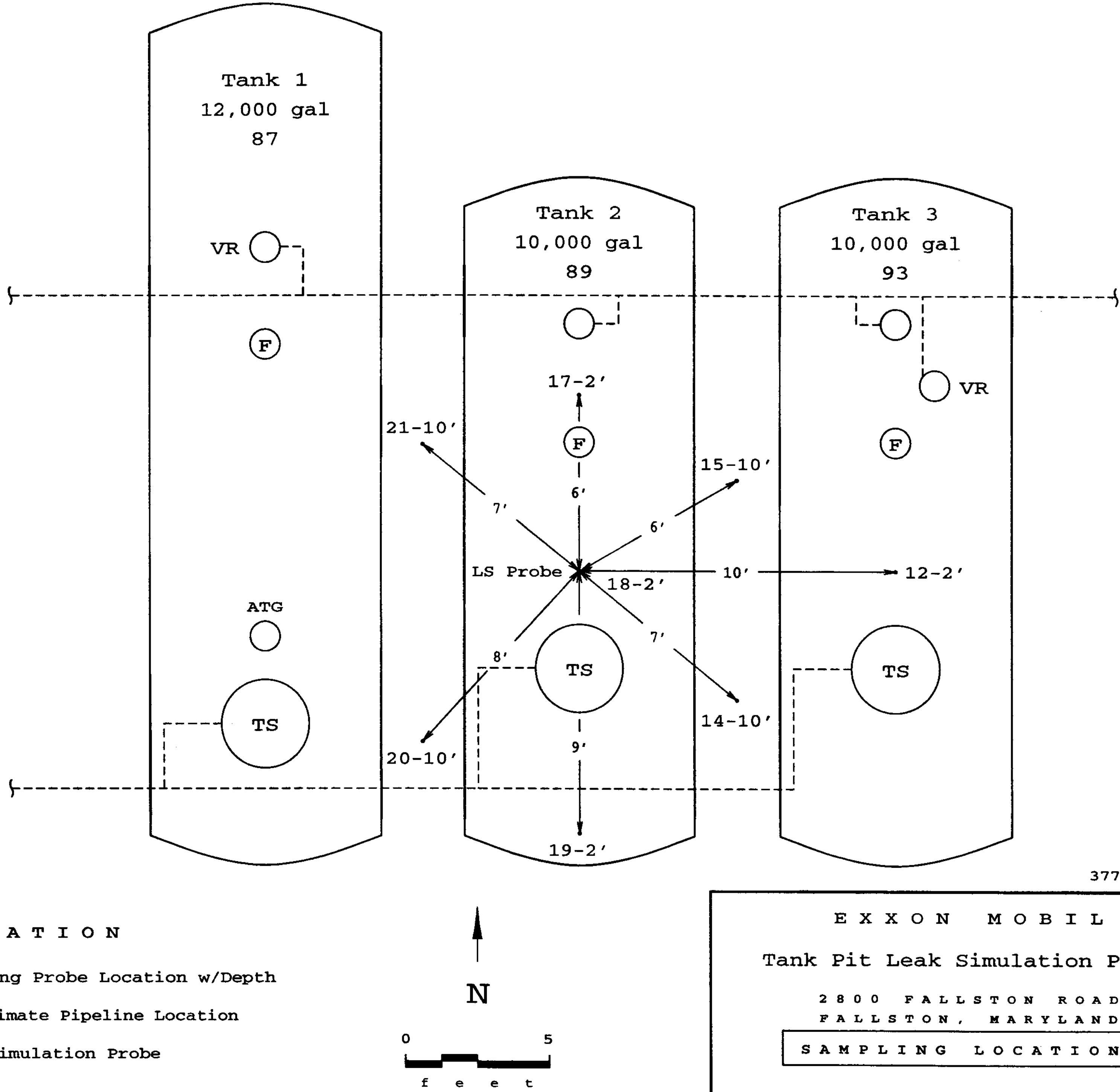
Figure

EXPLANATION

•1	Sampling Probe Location
------	Approximate Pipeline Location
XX(LS)	Leak Simulation Probe

File:37757-01 Size:A
Arc:37757-02 Date:08-09-04

Praxair Services, Inc.



37757EL-0000

EXPLANATION

•12-2'	Sampling Probe Location w/Depth
------	Approximate Pipeline Location
LS Probe	Leak Simulation Probe

File:37757-LS Size:A
Arc:37757-02 Date:08-09-04

EXXON MOBIL

Tank Pit Leak Simulation Probe

2800 FALLSTON ROAD
FALLSTON, MARYLAND

SAMPLING LOCATIONS

Appendix D: Action Summary

Action Summary

System	Zone	Location	Component	Action
1(87)	Tank	ATG riser	Flanged fitting	Grease o-ring and reassemble
1(87)	Tank	ATG riser	Riser to cap connector	Replaced
1(87)	Tank	VRSB	Bucket to riser connection	Replaced nipple
1(87)	Tank	FRSB	Fill cap	Replaced
1(87)	Tank	VRSB	Drain valve	Repaired drain valve
2(89)	Tank	Turbine head	Flanged Joint	Replaced o-ring
2(89)	Tank	Turbine head	Liquid return compression fitting	replaced tubing and fitting
2(89)	Tank	ATG riser	Cable compression fitting	Tightened compression fitting
3(93)	Tank	VRSB	Drain valve	Removed, cleaned, greased, reassembled
3(93)	Tank	FRSB	Drain valve	Repaired drain valve
3(93)	Tank	TS, ATG riser	Flanged fitting	Greased o-ring and reassembled
3(93)	Tank	TS, ATG riser	Riser to cap adapter connection	Replace cap fitting
3(93)	Tank	TS, ATG riser	Riser coupler	Coupler removed and cap adapter lowered
3(93)	Tank	Turbine head	Flanged joint	Cleaned bottom plate, replaced o-ring
3(93)	Tank	VRSB	Bucket to riser connection	Removed, cleaned and doped threads
3(93)	Tank	VRSB	Spill bucket damaged during reassembly	Replaced spill bucket assembly
3(93)	Tank	TS, Flex connector	Damaged during other repair activities	Replaced
4(Diesel)	Tank	FRSB	Cap adapter to riser joint	Replaced cap adapter
4(Diesel)	Tank	FRSB	Riser nipple to SB joint	Removed, cleaned, re-doped, reassembled
System	Zone	Location	Component	Action

System	Zone	Location	Component	Action
4(Diesel)	Tank	TS, ATG riser	Riser to ATG flange	Replace ATG cap fitting
4(Diesel)	Tank	TS, ATG riser	Riser to tank connection	Removed, cleaned, re-doped, reassembled
1-3	Vapor Return	Dispenser 9/10	vacuum motor 1 housing	Motor replaced
1-3	Vapor Return	Dispenser 9/10	vacuum motor 2 housing	Motor replaced
1-3	Vapor Return	Dispenser 7/8	vacuum motor 1 housing	Motor replaced
1-3	Vapor Return	Dispenser 7/8	vacuum motor 2 housing	Motor replaced
1-3	Vapor Return	Dispenser 7/8	solenoid compression fitting 1	Cleaned, doped, reassembled
1-3	Vapor Return	Dispenser 7/8	solenoid compression fitting 2	Cleaned, doped, reassembled
1-3	Vapor Return	Dispenser 7/8	compression fitting past motor	Cleaned, doped, reassembled
1-3	Vapor Return	Dispenser 5/6	vacuum motor 1 housing	Motor replaced
1-3	Vapor Return	Dispenser 5/6	vacuum motor 2 housing	Motor replaced
1-3	Vapor Return	Dispenser 1/2 vacuum	vacuum motor 1 housing	Motor replaced
1-3	Vapor Return	Dispenser 1/2	vacuum motor 2 housing	Motor replaced
System	**Zone**	**Location**	**Component**	**Action**

Appendix E: Explanation of Abbreviations

EXPLANATION OF ABREVIATIONS

Abbreviation	*Explanation*
P.1 7-27-04 15:09	**Probe.number date time.** This sample label indicates that the sample came from probe 1 (see map of tanks, Appendix C.) and was collected on 7/27/04 at 15:09
	Fiber Reinforced Plastic (fiberglass)
	Automatic Tank Gauge
FR	Fill Riser
FRSB	Fill Riser Spill Containment Bucket
VR	Vapor Recovery Riser
VRSB	Vapor Recovery Riser Spill Containment Bucket
	Submersible Turbine Pump
TS	Turbine Sump
ELD	Enhance Leak Detection
	Micrograms per Liter. Tracer concentrations are listed in units of micrograms per liter.